



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/811,023	03/26/2004	Norio Matsumoto	4415-0024	9819
35301	7590	09/12/2006		EXAMINER
MCCORMICK, PAULDING & HUBER LLP				STAICOVICI, STEFAN
CITY PLACE II				
185 ASYLUM STREET			ART UNIT	PAPER NUMBER
HARTFORD, CT 06103			1732	

DATE MAILED: 09/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/811,023	MATSUMOTO ET AL.	
	Examiner Stefan Staicovici	Art Unit 1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 30 June 2006.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 6-16 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-5 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
 Paper No(s)/Mail Date _____.
- 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application
- 6) Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicants' response filed June 30, 2006 has been entered. Claims 1-16 are pending in the instant application. This application contains claims 6-16 drawn to a non-elected invention

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murphy et al. (US Patent No. 6,352,662 B1) in view of Nelson *et al.* (US Patent No. 6,143,236) and in further view of Renaudin *et al.* (US Patent No. 6,071,460).

Murphy et al. ('662) teach the basic claimed process for making a hollow fiber reinforced article including, providing a mandrel (50), wrapping said mandrel (50) with a bladder, wrapping said bladder with a plurality of fiber reinforced pre-preg plies (60,62) to form a wrapped assembly, placing said wrapped assembly in a mold (vacuum chamber containing a forming die), heating and pressurizing said pre-preg plies by introducing a pressurized gas through said mandrel, and curing said pre-preg plies to thereby form said hollow fiber reinforced article (see col. 5, lines 21-58).

Regarding claim 1, Murphy et al. ('662) does not teach applying a vacuum such that said plurality of fiber-reinforced pre-preg plies do not contact said mold. Nelson *et al.* ('236) teach an

internal pressure molding process for making a fiber composite shaft including drawing a vacuum onto a mold after the mold is closed and prior to pressurizing a bladder (see col. 4, lines 54-58). Therefore, it would have been obvious for one of ordinary skill in the art to provide a vacuum as taught by Nelson *et al.* ('236) in the process of Murphy *et al.* ('662) because of known advantages that a vacuum provides such as, reduced porosity, increased aesthetics and improved properties, hence providing for an improved product.

Further regarding claim 1, although Murphy *et al.* ('662) in view of Nelson *et al.* ('236) teach a vacuum, Murphy *et al.* ('662) in view of Nelson *et al.* ('236) do not teach that the fiber reinforced pre-preg plies are not contact with the mold. Renaudin *et al.* ('460) teach an internal pressure molding process for making a fiber composite shaft including allowing for a gap to exist between the internal mold surface and the pre-preg plies (see Figure 6A). Therefore, it would have been obvious for one of ordinary skill in the art to provide a gap between the internal mold surface and the pre-preg plies as taught by Renaudin *et al.* ('460) in the process of Murphy *et al.* ('662) in view of Nelson *et al.* ('236) because Renaudin *et al.* ('460) specifically teach that such a gap prevents damage to the pre-preg plies, hence providing for an improved product (see col. 10, lines 60-65).

In regard to claim 2, Murphy *et al.* ('662) teach providing a mandrel (50), wrapping said mandrel (50) with a bladder and wrapping said bladder with a plurality of fiber reinforced pre-preg plies (60,62) to form a wrapped assembly (see col. 5, lines 21-58).

Specifically regarding claim 3, Murphy *et al.* ('662) teach heating and pressurizing said pre-preg plies by introducing a pressurized gas through said mandrel to thereby cure and form

said hollow fiber reinforced article (see col. 5, lines 21-58). Further, Lunde ('681) teaches a mandrel body having a plurality of fluid holes for drawing a vacuum and pressurizing.

Regarding claims 4 and 5, Murphy et al. ('662) teach removing said mandrel (50) after wrapping said plurality of fiber reinforced pre-preg plies (60,62) and connecting a source of pressurized gas (52) directly to said bladder (see col. 5, lines 39-42 and Figure 3). It is submitted that said pressurized gas source (52), as shown in Figure 5, includes a mouth-piece in order to connect directly to said bladder.

4. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murphy et al. (US Patent No. 6,352,662 B1) in view of Lunde (US Patent No. 6,692,681 B1) and in further view of Renaudin *et al.* (US Patent No. 6,071,460).

Murphy et al. ('662) teach the basic claimed process for making a hollow fiber reinforced article including, providing a mandrel (50), wrapping said mandrel (50) with a bladder, wrapping said bladder with a plurality of fiber reinforced pre-preg plies (60,62) to form a wrapped assembly, placing said wrapped assembly in a mold (vacuum chamber containing a forming die), heating and pressurizing said pre-preg plies by introducing a pressurized gas through said mandrel, and curing said pre-preg plies to thereby form said hollow fiber reinforced article (see col. 5, lines 21-58).

Regarding claim 1, Murphy et al. ('662) does not teach applying a vacuum such that said plurality of fiber-reinforced pre-preg plies do not contact said mold. Renaudin *et al.* ('460) teach an internal pressure molding process for making a fiber composite shaft including allowing for a gap to exist between the internal mold surface and the pre-preg plies (see Figure 6A) because such a gap prevents damage to the pre-preg plies when positioning the mandrel/bladder/pre-preg

plies assembly in the mold cavity, hence ultimately providing for an improved product (see col. 10, lines 60-65). Lunde ('681) teaches a process for making a hollow fiber reinforced article including, providing a mandrel body having a plurality of fluid holes for applying both a vacuum and a pressurized fluid, placing a bladder (internal-pressure holding tube) around said mandrel to form a mandrel/bladder assembly, drawing a vacuum onto said mandrel/bladder assembly, wrapping under vacuum a plurality of fiber reinforced pre-preg plies around said bladder to form a wrapped assembly, placing said wrapped assembly in a clamshell mold, removing said mandrel body by applying a pressurized fluid to the mandrel body, and pressurizing said bladder while heating to thereby cure and force said fiber reinforced pre-preg plies against the interior of said mold (see Abstract; col. 8, lines 46-63; col. 9, line 32 through col. 10, line 30; col. 15, lines 47-58; col. 20, line 42 through col. 21, line 5 and col. 22, lines 8-44). Hence, because (1) a vacuum is applied to the mandrel when the mandrel is positioned inside the clam shell and, (2) the pre-preg plies are forced into contact with the internal surface of the clam shell mold when the mandrel body is withdrawn, it is submitted that Lunde ('681) teaches applying a vacuum such that a plurality of fiber-reinforced pre-preg plies do not contact a mold. Therefore, in view of Renaudin *et al.* ('460) teaching a desirability of having a gap between the pre-preg plies and the mold, it would have been obvious for one of ordinary skill in the art to provide a vacuum to the mandrel as taught by Lunde ('681) in the process of Murphy *et al.* ('662) because, Renaudin *et al.* ('460) specifically teach a desirability of having a gap between the pre-preg plies and the mold, thereby preventing damage to the pre-preg plies when positioning the mandrel/bladder/pre-preg plies assembly in the mold cavity in the process of Murphy *et al.*

(‘662) in view of Lunde (‘681) and in further view of Renaudin *et al.* (‘460), hence ultimately providing for an improved product.

In regard to claim 2, Murphy *et al.* (‘662) teach providing a mandrel (50), wrapping said mandrel (50) with a bladder and wrapping said bladder with a plurality of fiber reinforced pre-preg plies (60,62) to form a wrapped assembly (see col. 5, lines 21-58).

Specifically regarding claim 3, Murphy *et al.* (‘662) teach heating and pressurizing said pre-preg plies by introducing a pressurized gas through said mandrel to thereby cure and form said hollow fiber reinforced article (see col. 5, lines 21-58). Further, Lunde (‘681) teaches a mandrel body having a plurality of fluid holes for drawing a vacuum and pressurizing.

Regarding claims 4 and 5, Murphy *et al.* (‘662) teach removing said mandrel (50) after wrapping said plurality of fiber reinforced pre-preg plies (60,62) and connecting a source of pressurized gas (52) directly to said bladder (see col. 5, lines 39-42 and Figure 3). It is submitted that said pressurized gas source (52), as shown in Figure 5, includes a mouth-piece in order to connect directly to said bladder.

Response to Arguments

5. Applicant's arguments filed June 30, 2006 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Art Unit: 1732

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stefan Staicovici, Ph.D. whose telephone number is (571) 272-1208. The examiner can normally be reached on Monday-Friday 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson, can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Stefan Staicovici, PhD


Primary Examiner 9/9/06

AU 1732

September 9, 2006